
TWO NEW SPECIES OF *MONOTAGMA* (MARANTACEAE) FROM THE VENEZUELAN GUAYANA

Two new species are described. One is from eastern Bolívar, Venezuela, and is related to *Monotagma spicatum* (Aubl.) Macbr. The other species is related to *Monotagma laxum* (Poepp. & Endl.) K. Schum. but is confined to white sand areas. Inflorescence terminology follows Andersson (1976).

Monotagma ovatum Hagberg, sp. nov. TYPE: Guyana: Pakaraima Mts., Mt. Membaru (5°57'N-60°33-34'W), 600 m, 12 Nov. 1979, Maas & Westra 4329 (holotype, U; isotypes, BRG not seen, GB, K, NY). Figure 1.

Herba rosulata 0.5-0.7 m alta. Folia basalia 1-4; ultimum folium cum lamina ovata, ad basin obtusa, ad apicem acuminata ad caudata, obliqua, 22-32 × 9-15 cm, adaxiali pagina supra totam superficiem hirtella praeter costam glabra vel solum ad apicem hirtella, abaxiali pagina glabra supra totam superficiem vel ad apicem hirtella; pulvinus glabro, 1.2-2.6 cm longo, annulato; petiolo glabro, 6-45 cm longo; vagina papyracea ad chartacea, 14-30 cm longa. Synflorescentia phyllomate bracteato 3.6-5.4 cm longa subtenta, raro frondoso, 3-6 nodis et 6-17 florescentiis, pedunculo 17-55 cm longo. Florescentia principalis 6-11 cm longa, usque 17 spathis, pedunculo 1.1-1.5 cm longo; infima spatha 2.5-3.4 cm longa, flavovirens, papyracea. Sepala 11-14 × 1-3 mm; tubus corollae 20-27 mm longus et 1-2 mm latus, extra glaber vel raro parce pilosus, intra hirsutus, parte basali excepto, lobi virelli, 5-8 × 2-4 mm; staminodium exterius aurantiacum, 6-7 × 2-3 mm; staminodium callosum 4-6 × 3-4 mm, cum parte specifica callosa, sine parte petaloidea; ovarium glabrum, (1-)2-3 mm longum. Capsula 9-12 × ca. 3 mm; semen 8-12 × 2-3 mm (arillo incluso); arillus cum duobus lobis, 2-3 mm longus.

Herb 0.5-0.7 m tall. Rhizomes branched to form clusters of a few shoots, each shoot with 1-4 basal leaves. Ultimate basal leaf with sheath 14-30 cm long, papyraceous to chartaceous, glabrous or slightly appressed-pilose along the margins; petiole 6-45 cm long, flattened laterally, glabrous; a prominent annulus present between petiole and pulvinus; pulvinus 1.2-2.6 cm long, flattened laterally, glabrous; blade 22-32 × 9-15 cm, ovate, chartaceous, broadly obtuse at base, acuminate to caudate at apex, oblique (apex displacement 1.8-3.7 cm), adaxial surface not papillose, hirtellous

throughout or at least at apex, midrib glabrous, abaxial surface not papillose, glabrous or rarely appressed-pilose at apex. Inflorescence a 3-6-nodate synflorescence with 6-17 florescences, lowermost node with a bladeless sheath 3.6-5.4 cm long or rarely with a leaf, subsequent nodes with bladeless sheaths, first internode 2.5-11.5 cm long, peduncle 17-55 cm long, glabrous or sparsely hirtellous to hirsute, hairs sometimes appressed. Main florescence 6-11 cm long with 5-17 distichous to unilaterally arranged spathes, first internode 0.8-1.4 cm long, peduncle 1.1-1.5 cm long; lowermost spathe 2.5-3.4 × 0.8-1.2 cm, yellowish green, chartaceous, abaxially glabrous or hirtellous at apex, or rarely hirtellous throughout. Florescence component with 4-5 one-flowered cymes; first prophyll 12-17 mm long, abaxially glabrous or sparsely hirtellous throughout or only at apex or at base, ecarinate; interphylls and bracteoles absent. Pedicel 1-2 mm long; sepals 11-14 × 1-3 mm; corolla tube 20-27 mm long and 1-2 mm wide, yellowish, glabrous to rarely slightly hirsute outside, inside hirsute except for a glabrous basal portion; lobes 5-8 × 2-4 mm, greenish; outer staminode 6-7 × 2-3 mm, orangish with entire apex; fertile stamen 3-5.5 mm long, petaloid appendage absent, theca ca. 1 mm long; inner staminodes reddish, at least toward base; callose staminode 4-6 × 3-4 mm, with a shelf-shaped callus 2-4 mm from apex, without petaloid appendage; cucullate staminode 3-6 mm long, lateral appendage ca. 1 mm long; ovary (1-)2-3 mm long, glabrous; style 2-5 mm long. Capsule 9-12 × ca. 3 mm; seed 8-12 × 2-3 mm, with a 2-3 mm long two-lobed aril.

Distribution and habitat. Known only from the Pakaraima Mountains in Guyana and from adjacent parts of Venezuela. It has been found in crevices and at bases of rocky escarpments and on moss-covered boulders; in Guyana, associated with the fern *Pterozonium* (Maas, pers. comm.), 500-1,300 m.

Monotagma ovatum is closely related to *Monotagma spicatum* (Aubl.) Macbr. but differs by hav-

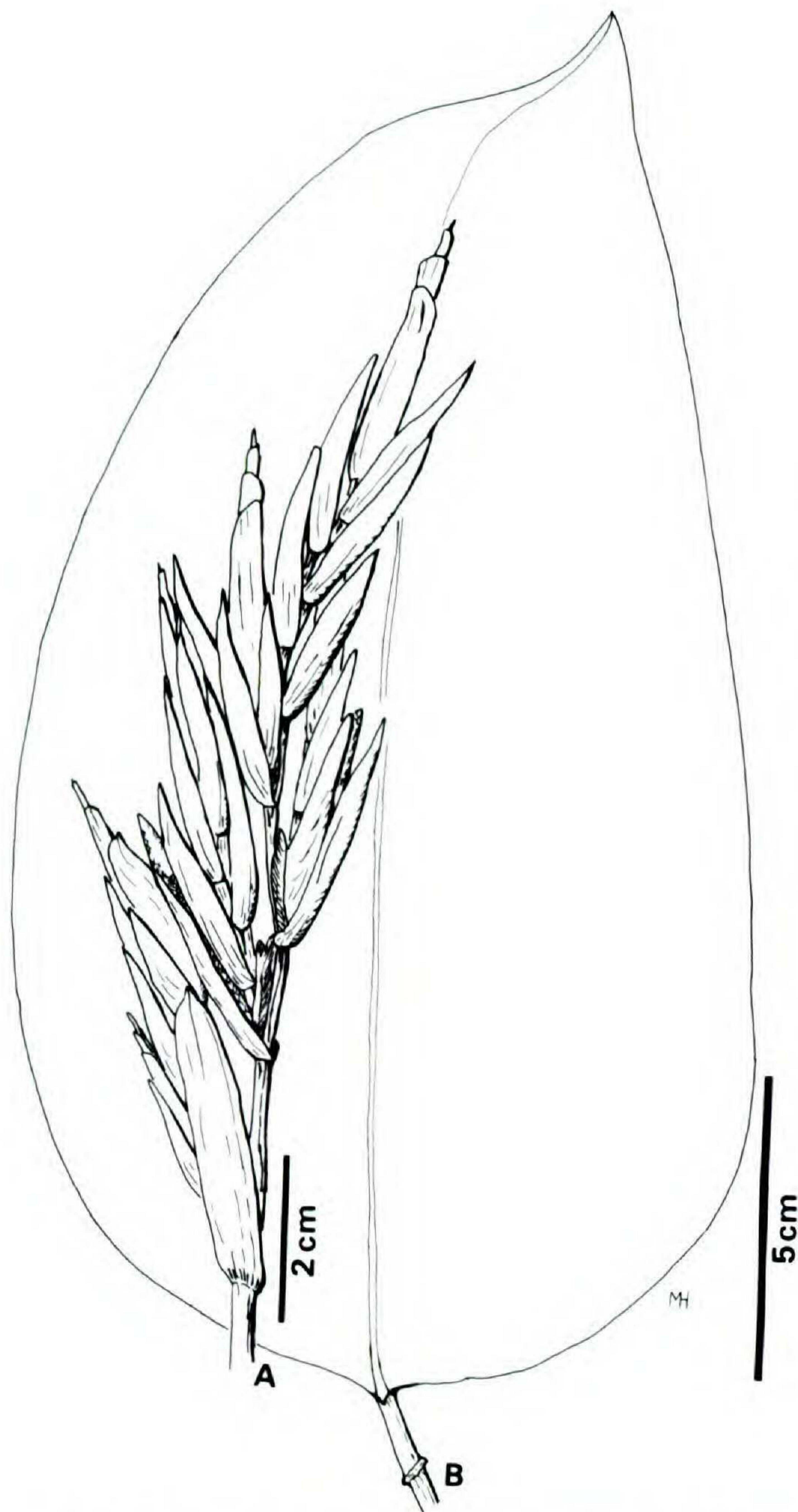


FIGURE 1. *Monotagma ovatum*, Maas & Westra 4432 (U).—A. Inflorescence.—B. Outline of ultimate basal leaf.

ing ovate (vs. elliptic) leaves, less than 10 cm (vs. over 11 cm) from the base to the broadest part of the blade, midrib both adaxially and abaxially glabrous (vs. pilose), pulvinus glabrous (vs. puberulent throughout or at least adaxially), main florescence peduncle 1.1–1.5 cm (vs. 0.4–0.9(1.2) cm), corolla tube 20–27 mm (vs. 17–23 mm) and outer staminode orangish (vs. bluish, fide coll.).

Additional specimens examined. GUYANA: Pakaraima Mts., Mt. Korak, Mazuruni River, 5°59'N–60°37'W, 600 m, Nov. 1979, Maas & Westra 4432 (BRG not seen, GB, U). VENEZUELA. BOLÍVAR: Cerro Venamo, Jan. 1964, Steyermark et al. 92723 (US, VEN); El Dorado, Apr. 1957, Couret 178 (US); El Dorado–Sta. Elena km 105, Dec. 1956, Foldats 2680 (F, US, VEN, mixed coll., specimen in MY = *M. spicatum*); El Dorado–Sta. Elena km 107, Aug. 1957, Trujillo 3520 (MY, U);

El Dorado–Sta. Elena km 130, Feb. 1968, Bunting 3017 (MY).

***Monotagma vaginatum* Hagberg, sp. nov.** TYPE: Brazil. Amazonas: about 5 km N of Presidente Figueiredo on the Manaus–Caracaraí road (BR-174), 8 Mar. 1986, Andersson & Hagberg 1750 (holotype, INPA; isotypes, GB, K, NY, S). Figure 2.

Herba rosulata 0.5–1.7 m alta. Rhizoma ± erecta, in parte supraterranea. Folia basalia 5–25, spirodistichae; ultimum folium cum lamina anguste ovata, ad basin cuneata ad obtusa, ad apicem acuminata ad caudata, centrica ad subcentrica, 20–51 × 2.4–13.5(–16.5) cm, adaxiali pagina hirtella ad puberula secus costam, nervos laterales majores, margines et ad apicem, vel solum secus costam et ad apicem, epidermide papillosa vel non papillosa, abaxiali pagina glabra supra totam superficiem vel ad apicem hirtella, epidermide nonpapillosa; pulvino supra puberulus, 0.7–2.8(–4) cm longo; annulo hirsuto vel deest; petiolo destituto; vagina chartacea ad coriacea, 18–65 cm longa. Synflorescentia phyllomate frondoso subtenta, 2–6 nodis et (3–)5–20(–25) florescentiis, pedunculo (10–)13.5–50 cm longo. Florescentia principalis 10–25 cm longa, usque 24 spathis, pedunculo 1.2–2.4(–3.3) cm longo; infima spatha 2.6–3.6(–3.9) cm longa, viridis ad flavovirens, chartacea, glabra. Sepala 6–12 × 1–2(–3) mm; tubus corollae 21–30 mm longus et 1–2 mm latus, extra glaber vel raro parce hirsutus, intra hirsutus, parte basali excepto, lobi virelli, 4–8(–10) × 2–5 mm; staminodium exterius album, 6–13 × 4–7 mm; staminodium callosum 4–9 × 3–7 mm, cum parte specifica callosa, sine parte petaloidea; ovarium vertice puberulum, 1–3 mm longum. Capsula (9–)13–20 × 3–4.5 mm; semen (8.5–)12.5–19 × 2–4.5 mm (arillo incluso); arillus cum duobus lobis, 2–4.5 mm longus.

Herb 0.5–1.7 m tall. Rhizomes ± erect, partly aboveground, subtended by “stilt” roots, branched to form clusters of 3–5 shoots, each shoot with 5–25 spirodistichous basal leaves. Ultimate basal leaf with sheath 18–65 cm long (6.5–37.5 cm in cauline leaf), chartaceous to coriaceous, ± glabrous or appressed-hirsute along margin, distally auriculate and furnished with a hair tuft; petiole absent; a hirtellous annulus usually present between sheath and pulvinus; pulvinus 0.7–2.8(–4) cm long, light green, laterally ± flattened, puberulent to hirtellous adaxially, hairs sometimes appressed; blade 20–51 × 2.4–13.5(–16.5) cm [(12.5–)16.5–41(–54.5) × 2.3–12.3(–14) cm in cauline leaf], length from base to broadest part (2.9–)6–13.5(–18) cm, very narrowly to narrowly ovate, chartaceous to coriaceous, markedly scalloped, cuneate to obtuse at base, acuminate to caudate at apex, centric to slightly excentric (apex displacement rarely to 3.5 cm), adaxial surface usually not papillose, dark green, hirtellous to puberulent on midrib, major lateral veins, margins, and apex (or at least on midrib and apex), abaxial surface not papillose,



FIGURE 2. *Monotagma vaginatum*.—A. Habit (from the type population, *Andersson & Hagberg 1750*).—B. Terminal part of a florescence with spathes and a flower (scale = 2 cm, *Hagberg & Medin 361*).

glossy green, glabrous or somewhat hirtellous at apex. Inflorescence a 2–6-nodate synflorescence with (3–)5–20(–25) florescences, lowermost node (sometimes also second and third node) with a cauline leaf, subsequent nodes with bladeless sheaths, first internode 2.7–12.5 cm long, peduncle (10–)13.5–50 cm long, appressed-pilose or rarely \pm glabrous. Main florescence 10–25 cm long with 8–24 distichous spathes, first internode 1–2 cm long, peduncle 1.2–2.4(–3.3) cm long; lowermost spathe 2.6–3.6(–3.9) \times 0.7–1.1 cm, greenish to yellowish green, chartaceous, glabrous or rarely puberulent abaxially at apex. Florescence component with 3–5 one-flowered cymules; first prophyll 13–19(–21) mm long, abaxially glabrous, ecarinate; interphylls rarely present; bracteoles absent. Pedicel 1–2 mm long; sepals 6–12 \times 1–2(–3) mm, translucently white; corolla tube 21–30 mm long and 1–2 mm wide, white, outside glabrous or rarely hirsute above tip of sepals, inside hirsute

except for a glabrous basal portion, lobes 4–8(–10) \times 2–5 mm, white to pale green; outer staminode 6–13 \times 4–7 mm, white, spatulate with entire apex; fertile stamen 3–8 mm long, petaloid appendage absent, theca 1–2 mm long; callose staminode 4–9 \times 3–7 mm, white, sometimes green toward apex, with a shelf-shaped callus 2–4 mm from apex, without petaloid appendage; cucullate staminode 3–6 mm long, white, lateral appendage 1–2 mm long; ovary 1–3 mm long, puberulent apically; style 3–6 mm long, back of style turning red when tripped. Capsule (9–)13–20 \times 2–4.5 mm; seed brownish, (8.5–)12.5–19 \times 2–4.5 mm, with a whitish, 2–4.5 mm long two-lobed aril.

Distribution and habitat. *Monotagma vaginatum* occurs in the white sand forests (Amazonian caatingas/campinas) around Iquitos, Peru; in southern Venezuela and adjacent parts of northwestern Brazil; around Manaus, Brazil; in scattered

campina areas in eastern Acre, Brazil; and in Pará, Brazil. It has also been found in the coastal forest in the basin of the Oyapock River and on Piton Rocheux in French Guiana.

Monotagma vaginatum is related to *Monotagma laxum* (Poepp. & Endl.) K. Schum. from which it differs by having rhizomes partly aboveground (vs. on ground level), basal leaves spirodistichous (vs. distichous or shoot apex irregularly twisted), mature shoots with 5–25 (vs. 1–7(–15)) basal leaves, which are comparatively narrower [length/width (3–)3.7–8.5 vs. 2.75–4.5(–5.5) cm], petiole absent (vs. present) and sepals 6–12 (vs. 9–17 mm) long.

Additional specimens examined. BRAZIL. ACRE: 11 km S of Rio Branco, Oct. 1980, *Lowrie et al.* 628 (GB, INPA); 12 km S of Rio Branco on road to Xapuri, Oct. 1980, *Cid & Souza* 3030 (INPA); 5 km E of Sena Madureira, Oct. 1968, *Prance et al.* 7789 (F, GH, INPA, K, MG, NY, S, U). AMAZONAS: 12 km up on Rio Cuieiras, Feb. 1969, *Kennedy* 112 (DUKE, GB); 50 km up on Rio Cuieiras, Apr. 1974, *Ongley & Ramos* P21782 (INPA, NY); 3 km S of Serra Central da Serra Aracá, Feb. 1984, *Amaral* 1674 (GB); 62 km S of Presidente Figueiredo on road BR 174, Mar. 1986, *Andersson & Hagberg* 1754 (GB, INPA, S); between Rio Tupana and Castanha, on road Manaus–Porto Velho, July 1972, *M. F. Silva et al.* 883 (INPA); INPA reserve, 45 km N of Manaus on BR 174, Dec. 1977, *A. B. Anderson* 321, 339 (INPA); Manaus, 1877, *Jobert* 430 (P); Aug. 1957, *Rodrigues* 480 (INPA); Jan. 1963, *E. Santos* 1487 (GB); Feb. 1960, *de la Sota* 2459 (LIL); Feb. 1901, *Ule* 5415 (G, HBG, MG); Manaus, 5 km N of airport on road to Itacoatiara, Mar. 1986, *Andersson & Hagberg* 1773 (GB, INPA); Manaus, Igarapé do Pensador, Oct. 1955, *Rodrigues* 2133 (INPA); Manaus, Ponta Negra, 1971, *Prance et al.* 11683 (GB, GH, INPA, MG, NY, U); Manaus, near Parque 10, Sep. 1971, *Maas & Maas* 277 (INPA, K, MO, U); near Manaus, Dec. 1964, *Vogel* 288 (U); Manaus–Caracarái (BR 174) km 130, Dec. 1974, *Gentry* 12966 (INPA, MO); Nov. 1973, *Berg et al.* P19525 (GB, INPA); Feb. 1974, *Steward et al.* 20294 (GB, INPA); Manaus–Caracarái km 131, Mar. 1974, *Loureiro et al. s.n.* (INPA); Manaus–Caracarái km 60, INPA reserve, July 1976, *Kirkpatrick* 106 (INPA); Oct. 1976, *Kirkpatrick* 118 (INPA); Manaus–Caracarái km 10, Oct. 1966, *Prance et al.* 2711 (F, K, INPA, MG, NY, S, U, UBC, UC); Marabitanas, Rio Negro, Apr. 1947, *Pires* 476 (IAN); Porto Camanaus, Oct. 1978, *Madison et al.* 389 (INPA); Rio Xeriuini, Apr. 1974, *Pires* 13997 (INPA, MG); São Gabriel da Cachoeira, Mar. 1975, *M. R. Cordeiro* 435 (IAN); São Gabriel, airport, Oct. 1978, *Madison et al.* 506 (INPA, MG, US); Tunuí, Içana, Oct. 1947, *Pires* 711 (IAN, NY); above Santa Isabel do Rio Negro, Oct. 1971, *Prance et al.* 15381 (GB, INPA, NY, U); junction of Rio Cuieiras and Branquinho, Apr. 1974, *Campbell et al.* P21926 (INPA, NY); mouth of Rio Caiari, Sep. 1952, *Frões & Addison* 28648 (IAN). PARÁ: 17 km S of Ligação do Pará on road Belém–Brasília, Mar. 1980, *Plowman* 9398

(MG); 40 km SW of Marabá, on road PA 150, Dec. 1981, *Daly et al.* 1693 (GB); Paragominas, Tingi do Pará, Dec. 1979, *Maciel et al.* 466 (MG); Tucuruí, Oct. 1977, *A. S. Silva et al.* 173 (K, MG, MO, NY, S); km 324 on road Belém–Brasília, Aug. 1960, *Oliveira* 1013 (IAN); km 174 on road Belém–Brasília, May 1960, *Oliveira* 664 (IAN). COLOMBIA. GUAINIA: San Felipe, Nov. 1952, *Humbert* 27441 (P). FRENCH GUIANA: Crique Gabaret, basin of Oyapock River, Apr. 1988, *Cremers* 9929 (GB); Piton Rocheux, Crique Armontabo, Feb. 1981, *Cremers* 7044 (GB, P). PERU. LORETO: Brillo Nuevo, Río Yaguasyacu, Apr. 1977, *Plowman et al.* 6806 (F, GH); Lago Llanchama, near Río Nanay, Aug. 1972, *Croat* 18714 (MO); Mishana on Río Nanay, Jan. 1976, *Gentry et al.* 15837 (F, MO); Feb. 1987, *Hagberg & Medin* 361 (AMAZ, F, GB), 365 (AMAZ, F, GB, U); July 1984, *Vásquez et al.* 5298 (GB); Nauta, June 1984, *Vásquez & Jaramillo* 5090 (GB); Pto. Almendras, SW of Iquitos, May 1974, *Andersson* 15 (GB); Quistococha, near Iquitos, Nov. 1940, *Asplund* 14662 (S), 14663 (S); Dec. 1979, *Davidson & Jones* 9685 (GB); May 1978, *Gentry & Jaramillo* 22304 (GB). VENEZUELA, AMAZONAS: Cerro Aracamuni, Quebrada Camp, Oct. 1987, *Liesner & Carnevali* 22327 (GB); Oct. 1987, *Liesner & Delascio* 22249 (GB); Cerro de La Neblina, ESE slope above Río Mawarinuma, Apr. 1984, *Thomas* 3248 (GB); IVIC study site, 4 km NE of San Carlos de Río Negro, Apr. 1979, *Liesner* 6157 (GB, MO, VEN); Mamurividi, Río Pacimoni, June 1984, *Davidse & Miller* 26714 (GB); Mucuriapi, lower Río Baria, June 1984, *Davidse & Miller* 26746 (GB); Río Mawarinuma, 3–5 km NE of Cerro de La Neblina base camp, Mar. 1984, *Liesner* 16344 (GB); Río Pacimoni, Apr. 1970, *Steyermark & Bunting* 102457 (MY, NY, VEN); San Carlos de Río Negro, July 1989, *Bunting et al.* 4137 (MY, U); Jan. 1968, *Wessels Boer* 2343 (GB, U); San Carlos de Río Negro, near airport, Apr. 1970, *Steyermark & Bunting* 102767 (GB, US, VEN); 0–0.5 km NE of San Carlos de Río Negro, Nov. 1977, *Liesner* 3683 (VEN), *Liesner* 3684 (MO); 5 km S of San Carlos de Río Negro, Apr. 1979, *Liesner* 6495 (MO, VEN); Solano, Brazo Casiquiare, June 1984, *Davidse & Miller* 26662 (GB).

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